

REMARKS

Claims 13-25 and 39-52 are pending. By this Amendment, claims 13, 14, 17, 19 and 21 are amended, claims 39-52 are added, and non-elected, withdrawn claims 26-38 are canceled. No new matter is added by the above amendments.

Of the added claims, claims 40 and 47 are independent claims. Applicant submits that newly added claims 39-52 should be examined with elected claims 13-25 because they are directed to similar subject matter in that they all recite that a diffractive optical element includes an oxide crystal material and that a surface shape is formed on the oxide crystal material.

As noted above, withdrawn claims 26-38 have been canceled. Applicant reserves the right to file one or more divisional applications to pursue the non-elected claims.

I. Information Disclosure Statement

The Examiner is requested to consider the information identified in the attached Information Disclosure Statement. The Examiner is requested to return an initialed PTO-1449 with the next Patent Office communication.

II. All Pending Claims are Patentable

Claim 14 stands rejected under 35 U.S.C. §112, first and second paragraphs. These rejections are overcome by the above amendments to claim 14. In particular, claim 14 as amended clearly is supported by previous claim 13 and by the specification at, for example, page 5, lines 15-19. In addition, newly added dependent claim 39 is clearly supported in the specification at, for example, page 7, lines 1-12 and page 18, lines 6-9. Withdrawal of the rejections is requested.

Claims 13-18 and 20-25 stand rejected under 35 U.S.C. §103(a) over US 2002/0030890 (Kato et al.) in view of U.S. Patent No. 5,699,183 (Hiraiwa et al.). This rejection is respectfully traversed.

Neither Kato et al. nor Hiraiwa et al. discloses or suggests a diffractive optical element that includes an oxide crystal material and in which a surface shape is formed on the oxide crystal material as recited in independent claims 13, 40 and 47. As described in Applicant's specification, forming the surface shape on an oxide crystal material is advantageous over the previous practice of forming the surface shape on an amorphous material. See, for example, page 4, lines 7-19 and page 18, lines 9-25 of Applicant's specification. Kato et al. discloses forming the surface shape of a diffractive optical element on an amorphous material, not on an oxide crystal material. In particular, the surface shape of the Kato et al. diffraction grating 1a is formed on multilayered film 3. See, for example, paragraph [0038] of Kato et al. The multilayered film 3 of Kato et al. is made by sputtering, EB film forming or by CVD film forming. See, for example, paragraphs [0042], [0048] and [0052]. Such techniques do not form a crystal material. Thus, although the substrate 2 on which the multilayered film 3 is formed can be a crystal (see, for example, paragraphs [0048] and [0052]), the material in which the surface shape is formed is the amorphous multilayered film 3.

Hiraiwa et al. does not account for this deficiency in Kato et al. Accordingly, all pending claims are patentable over Kato et al. and Hiraiwa et al. Withdrawal of the rejection is requested.

In addition, Applicant notes that the Office Action appears to misunderstand the meaning of "optic axis" as opposed to "optical axis" as used in some of Applicant's claims. An "optical axis" refers to "a line passing through a radially symmetrical optical system such that rotation of the system about this line does not alter the system in any detectable way." For example, axis AX in Applicant's Fig. 1 is an optical axis. See, for example, page 13, lines 6-10. An "optic axis" refers to a specific direction in which the amount of double refraction is kept to be zero in a crystal having double refraction or birefringence

characteristics. See, for example, page 19, line 20 - page 20, line 3 of Applicant's specification. Thus, an "optic axis" cannot be defined in a non-crystal material. Kato et al. provides no discussion about the direction of an optic axis of its crystal substrate 2, and cannot provide any teaching about an optic axis of its multilayered film 3 because the multilayered film is an amorphous material.

Claim 15 stands rejected under 35 U.S.C. §103(a) over the references applied against claim 13, and further in view of U.S. Patent No. 6,563,567 (Komatsuda et al.). This rejection is respectfully traversed. Komatsuda et al. does not overcome the deficiencies noted above with respect to Kato et al. and Hiraiwa et al. Thus, claim 15 also is patentable.

III. Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



Mario A. Costantino
Registration No. 33,565

MAC:lmf

Attachments:

Information Disclosure Statement
Petition for Extension of Time

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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